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ESSAY

ON THE

MECHANISM OF PARTURITION.

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AN

ESSAY

ON THE

MECHANISM OF PARTURITION,

From the German of

C. F. NAEGELÈ,

PROFESSOR OF MIDWIFERY AT HEIDELBERG.

BY

EDWARD RIGBY, M. D.

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PREFACE.

In reading the works of an author who has flourished in any particular branch of science during the last century, the question naturally suggests itself, what advances have been made since his time, what improvements have taken place, and what new and important facts have been disclosed, to enable us to feel we understand it better, or in other words, to prove that it has not remained in the same state in which he left it? Any person who has

devoted his attention to midwifery, and is at all acquainted with the history of this branch of the medical profession, must acknowledge the immense advance it made during the beginning and middle of the last century, in the hands of Smellie, &c. &c.; till then the process of parturition, of itself so interesting and important, had remained enveloped in the greatest obscurity, and from a want of attention or of accuracy in touch, the most vague and unreasonable theories had been entertained as to the position of the head during its passage through the pelvis. For a long time the head was supposed to enter the superior

aperture of the pelvis, with the sagittal suture parallel to its conjugate diameter, and it was to Fielding Oulde of Dublin, that we are indebted for making the first attempt to elucidate this intricate subject; his remark, that the head entered the pelvis with the sagittal suture parallel to its transverse diameter, although not strictly correct, was nevertheless the first great step made towards ascertaining the true data of this important process; and was fully confirmed in many respects by Smellie. To this great accoucheur we are indebted for many valuable facts connected with the mechanism of parturition; more

especially as having first pointed out the true direction which the axis of the gravid uterus and that of the fœtus take at the beginning of labour; for having also described the position of the os uteri at that period, and the manner in which the head enters it during its gradual dilatation, &c.

It is not a little remarkable, that, possessing such facts, neither Smellie, nor any of the authors that succeeded him, should have made any attempt to call in question the prevailing opinion, that the vertex was that part of the head which presented; in fact, with the exception of the two treatises by Solayres de

Renhac and Matthias Saxtorph, on the oblique position of the head at the beginning of labour, little or nothing has been added to our information on this subject.

It is the more to be regretted, since an intimate acquaintance with the mechanism of child-birth is of the highest importance to the accoucheur; it is the foundation on which all his practical knowledge must be grounded; for without it he can have no positive data, from which he may be enabled to draw indications for the course of treatment necessary to be pursued. Uncertain whether any circumstance

that may present itself to his observation is to be regarded as unusual, or merely as the result of changes inseparably connected with this natural process, he is unable to draw the important line which is the boundary between health and disease, and to decide in what cases he may confidently leave nature to her own powers, or where and at what period it will be necessary to bring in the aid of art to her assistance.

An accurate knowledge of the mechanism of child-birth is indispensably necessary in performing the various operations of midwifery,

more especially in applying the forceps and in turning; the former, which is one of the simplest and most valuable operations known, becomes in the hands of an ignorant practitioner not less cruel than dangerous; the latter, of itself more difficult and complicated, and infinitely more dangerous to the child's life, depends for its success solely on an intimate knowledge of the relations between the maternal passages and size of the child, as well as on the state in which nature is in to assist or retard the completion of this operation.

An accoucheur who is not well acquainted with the mechanism of

parturition, may be fairly said to be in the dark. He can only be compared to the sailor, who, putting to sea without a chart, expects to be blown across the wide ocean to the place of his destination, ignorant of the nature and situation of the shoals and sunken rocks, that may interrupt his course.

The following essay on the mechanism of parturition, in cases of presentation of the head or face, was not originally intended by the author for separate publication, but was inserted in a journal that has a considerable circulation in Germany; but the novelty of the author's views, and the rank he justly

holds in this department of medicine on the continent, caused it to attract considerable notice, and it was reprinted, 1822, in the form of a pamphlet, by a medical friend, who from his own long experience was convinced of the justness of the author's theory, and privately distributed in several medical schools in Germany.

In the May of 1827, during a journey from Berlin to Heidelberg, where I intended to hear his course of midwifery, I had an opportunity at Würzburg of reading one of these essays, which had been sent to Dr. Ulsamer, assistant physician to the Lying-in Hospital of that place. I

was not less struck with the simplicity and conciseness with which the author expressed his opinions, than with their peculiarity; the more so on finding that my friend Dr. Ulsamer, from the result of his own researches, coincided perfectly with him.

On my arrival at Heidelberg, the numerous opportunities of examination which the Hospital there affords, enabled me quickly to obtain a precision of diagnosis which I had not before possessed, and to satisfy myself that the third* position of

* As the presentations of the head, according to the German schools, follow a different order of arrangement to that adopted in the

the head (according to the German

schools of France and England, it will be perhaps better to state them briefly, and thus avoid any confusion.

The Germans allow only four positions of the cranium, *viz.*

The *first* with the posterior fontanelle towards the left foramen ovale, the sagittal suture corresponding to the right oblique diameter of the pelvis.

The *second* with the posterior fontanelle towards the right foramen ovale, the sagittal suture in the left oblique pelvic diameter.

The *third* the reverse of the first, with the anterior fontanelle towards the left foramen ovale.

The *fourth* the reverse of the second, with the anterior fontanelle towards the right foramen ovale.

Baudelocque, whose arrangement has been fol-

schools) did really occur much more frequently than was generally supposed, and that as the labour

lowed by the French and English authors, has divided the positions of the head into six species: according to him, the first two are the same as those of the German schools; his third position is with the sagittal suture parallel to the conjugate diameter of the pelvis, the posterior fontanelle towards the symphisis pubis; the fourth and fifth correspond to the third and fourth of the German schools; and the sixth is with the sagittal suture parallel to the conjugata, with the anterior fontanelle towards the symphisis pubis: the two positions of the head where the sagittal suture corresponds to the conjugate diameter of the pelvis, *viz.* the third and sixth, are not allowed by the Germans, being very justly considered as impossible.

That such positions do occur sometimes I do

proceeded, it changed into the second position, in which the child was afterwards born.

I have added, by the advice of my excellent friend Professor Naegelè, a short account of some of these cases, which I had found worthy of particular observation, and noted down on account of the regular and gradual course of the labour, and which therefore will serve as a good illustration of the subject.

not pretend to deny; but it is merely in cases where the child has either been born prematurely, or has been dead for some time previous to its birth.

In examining such presentations, the accoucheur must not always expect to feel the anterior fontanelle in the vicinity of the left acetabulum, for not unfrequently he will be unable to reach it; if this be the case, he must direct his finger towards the right sacro-iliac synchondrosis, where, following the course of the sagittal suture, he will find the posterior fontanelle situated lower than the anterior one, and therefore capable of being reached with much less difficulty: under such circumstances, the horizontal position of the patient on her left side is very unfavourable for exami-

nation; while lying in the supine posture, or standing, will be found to be more convenient.

In speaking of those positions of the head, which in France and England have been commonly known by the term of vertex position, I have adopted the same mode of expression, although, strictly speaking, it may not be correct, since at no period of labour is the vertex most dependent. Unwilling to alter old names, and invent new ones, as it has been the fashion lately to do, Professor Naegelè has used indiscriminately through this essay the terms of head and vertex position;

but at the same time acknowledges that he would much rather have used the term "cranial position," in contra-distinction to that of the face, these two being, according to his experience, the only positions in which the head of the full grown fœtus presents at birth. The remarks on presentations of the nates which follow this essay, are taken from a manuscript of the author, who, with that warm-hearted kindness which so characterises him, instantly terminated his remarks, in order that I might make my translation more complete. Among the difficulties which are inseparably

connected with translating a work of this kind, the attempt to anglicise the words *Ein* and *Durchschneiden* has perplexed me most; the former expressive of that situation of the fœtal head where it passes through the os uteri and enters the vagina, the latter where it is distending the os externum with the greatest circumference which it presents in its passage through it.

To those who are well acquainted with the German and English languages I must especially look for indulgence, for they will be better able to appreciate the difficulty of the task, and more inclined to over-

look the stiffness of style which pervades the whole translation. On account of the preciseness with which the author has expressed himself, I have endeavoured as far as possible to follow him word for word, and trust, that although I may have failed in the choice of my language, I shall have succeeded in giving his exact meaning, and in making it intelligible to the reader.

E. R.

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ON THE

MECHANISM OF PARTURITION.

"RIEN de plus curieux que le mechanisme par lequel le fœtus est expulsé; tout s'y passe avec une precision admiable, &c.*" is the observation of one of our most deservedly celebrated physiologists; and every one who has devoted his attention to this operation of nature, will acquiesce in it. The mechanism of child-birth should not only excite our at-

* Magendie, Precis Elem. de Physiologie, à Paris, 1827, tom. ii, p. 453.

tention and admiration, but deserves an elaborate study: on it depends the very existence of that department of the healing art, which can render assistance in cases of difficult parturition.

A want of that knowledge has caused this important branch of medicine to remain so long behind the rest in improvement; so that the accoucheur can feel no gratification in looking back on the period, when so many branches of the healing art had reached a degree of perfection, which the greatest physicians of more recent times have been unable to surpass. Hence midwifery can neither boast of an Hippocrates or Galen.

An imperfect knowledge of the mechanism of labour, caused men of talent, who chanced to fall in with nature's track,

and were nearly approaching to the truth, to neglect the opportunity offered of penetrating into the mystery, under the false persuasion that they were in full possession of it. Instead of studying the laws of nature by long and laborious observation, they presumed to dictate to her: instead of deriving a mistrust in their theories, from their being so frequently inapplicable, and instead of comparing them with the infallible test of all natural science, they were dazzled by their own elaborate calculations, and declared these deviations from their own system to be faults which must be amended by art. They turned their backs on nature, and puzzled themselves with inventing instruments, &c. Far from improving the art, whose perfection is the closest imitation

of nature, from a premature inconsiderate zeal, they lost the opportunity, nay precluded the possibility, of rectifying their erroneous theories concerning the mechanism of parturition. This was the reason why such men left the art in all essential respects unadvanced; and why it, in the earlier part of the last century, could not boast of the progress which the zeal of those men, their talents, and the advantages they could command, would have led to expect.

It has been considered by all accoucheurs, who have reflected upon the subject at all, as a most difficult task, to describe the manner in which the fœtus is summoned into life by the efforts of nature. Opportunities, time, unwearied patience, candour, the entire absence of

previously received opinions, and a mind honestly open to the truth, are the essential requisites of the man who enters upon this department of the study of nature. Notwithstanding the admirable and successful efforts of an Ould, a Smellie, of Matthias Saxtorph, Solayres de Renhac, Baudelocque, Boer, and others, he only, who has learnt the process of labour merely from books, could consider this inquiry as exhausted.

I consider it rather as the indispensable duty of every one who has the opportunities, to do all in his power to extend and improve the knowledge of the mechanism of labour; for on it depends a correct insight into the various obstacles to that function, and consequently every salutary measure at the patient's bed-side.

It is well known as a peculiarity in the function of labour, that it approaches nearly to a state of disease, and has a great resemblance to it, although of itself it is a process perfectly compatible with health: many of the appearances which in other functions mark the difference between health and disease so strikingly are here absent, and it naturally becomes extremely difficult to discriminate between the two conditions. Hence, not to mention many other things of this sort, it not unfrequently happens, that of several practitioners of midwifery, who may chance to meet at the bed-side of a patient in labour, some will think themselves necessitated to call in the assistance of art, while the others will consider it as unnecessary and even injurious;

and yet human life is depending on which of the two is right;—a circumstance which comparatively occurs much more frequently in this than in the other departments of the healing art.

The importance of the treatment, and its momentous consequences, result necessarily from the peculiar nature of the cases which fall within the province of the accoucheur. To decide whether any thing is to be done, *what*, and *why*, absolutely requires an accurate knowledge, not only of the usual manner in which the act of parturition proceeds, but also of its varieties, of its deviations from the usual course within the limits in which the purposes for which the function is designed can be attained without injury to the mother or child solely by the ac-

tivity of nature, and a not less intimate acquaintance with the laws which nature follows when undisturbed in her operations, and from which she does not deviate even in a state of disease. The brief remarks which I here contribute, are solely the result of observations, which I have instituted with the greatest care and accuracy that I was capable of. It does not make the most distant pretension to perfection: it is a fragment; and would have been nothing more, even if I had not limited it to the description of the mechanism of labour where the head presents*.

* The description of presentations of the nates, that is inserted towards the end of this treatise, was taken from a MS the author was so kind as to allow me to translate.—Tr.

An historical description and review of the opinions and theories which have been hitherto in vogue, respecting the process of labour, was not my intention; and if I have here and there touched upon the views, &c. of others, I have done it solely for the purpose of exhibiting in the clearest possible light, that which I have reason to believe I have perceived in nature. Where the opinions and assertions of others, and especially of celebrated men, have been quoted, I have, as far as it was possible, used their own words, by which many quotations and nominal references, especially for those already advanced in their profession, were unnecessary. Nevertheless, to leave nothing unnoticed, I must remark, that some part of this treatise was contained in

an answer to a friend's letter (a young man of great talents, who had devoted himself with remarkable zeal to the study of physiology), in which he asked me, what system of midwifery, according to my opinion, contained the most accurate description of the mechanism of child-birth. Hence it will be found, that I have here and there avoided, or differently expressed technical terms relating to midwifery, which for a professed accoucheur would have been unnecessary, &c. In his letter my young friend also remarks, that it appeared to him very strange, that in the systems and other works on physiology, exactly those parts which treated on the function of parturition were treated so briefly and with so little precision ("sicco pede," as he expressed it), that

most of them contained merely short extracts from works on midwifery; that it seemed to him almost as if the physiologists, and moreover those who had opportunities for self-observation, had not taken that active part in diffusing light upon this subject, through that zeal which they devote to their researches, as they had done to others, which although certainly highly deserving of being known, were in many respects not so important. Finally, I must observe, that this treatise has remained in manuscript for two years, and that in the perusal before my sending it to the press, I found nothing in the substance of it which I should wish to change, although my attention, from the result of previous observations, had been kept in a more decided direction, and was better

enabled to confirm the accuracy of my own view, and to ensure myself from being deceived and drawing too hasty conclusions, &c.

SECTION I.

In that presentation of the head which occurs most frequently, the head presents not with the occiput but with the vertex; in fact, with the right parietal bone, the posterior fontanelle being turned towards the left acetabulum at the time of labour.

Upon examination at the beginning of the second stage* of labour, and in those

* The German teachers of midwifery divide the period of labour into five stages. According to them, the *first* begins with the first contractions of the

who have already had children, at the first approach of the pains, and even earlier, the finger which is introduced in the direction of the central or middle line of the pelvic cavity, and brought in contact with the head, will touch the right parietal bone in the vicinity of its tuber; the two fontanelles are mostly found situated at an equal height, sometimes the anterior, but more frequently the posterior one a little lower. At the entrance of the pelvis, the head does not take a perpendicular, but a perfectly oblique direction, so that the part which lies lowest or deepest, is

uterus, these have no effect on the mouth of the womb: the *second* stage begins with the opening of the os uteri: the *third* with the rupture of the membranes: the *fourth* with the birth of the child: and the *fifth* with the expulsion of the placenta.—Tr.

neither the vertex nor the sagittal suture, but the right parietal bone. The sagittal suture is much nearer to the promontorium of the sacrum than to the os pubis, and divides the os uteri, which projects backwards and generally somewhat to the left, across into two very unequal segments. Under certain circumstances (which it would here be digressing too much to explain at length*), a swelling of the in-

* Still I cannot refrain at least from pointing out some circumstances which belong to this subject. This species of swelling is observed especially in first labours; sometimes also in labours where the mother has already borne several times; in cases where the liquor amnii is very scanty, or where it has escaped too early; in short, generally where the head presses hard upon the inferior part of the uterus, or where the uterus contracts tightly upon it. It occurs also where there is a peculiar rigidity and tension of the

teguments of the head frequently forms soon after the os uteri has begun to dilate; which, in the further progress of labour, where the os uteri changes its state, its di-

os uteri, which continues even during the interval of the pains, and depends upon an irregular activity of the organ, whereby the swelling becomes thicker, harder, and more extended. If the os uteri continues unusually long open to the extent of half an inch, an inch, or somewhat more, without dilating (as one not unfrequently observes where it remains of the same size for six, eight, or more hours, in spite of the pains, which seem sufficiently powerful), if the other stages of labour follow very quickly upon each other, and the head traverses the external passages especially with unusual rapidity and ease, the child brings this swelling with it into the world (which among the various swellings of the cranial integuments that form during labour, may be named the first), and the rest of the head is found free from swelling.

rection, and also the head its position against it, by degrees again disappears; nevertheless, as the os uteri dilates, it is still for some time capable of being felt, although become much softer. This swelling (in that position of the head which is here the subject of discussion) is situated upon the *right* parietal bone, close to its upper edge, and equally distant from both angles: a small piece sometimes extends over the sagittal suture unto the other parietal bone; its circumference depends upon the degree of dilatation which the os uteri had attained. The higher the head is the nearer its long diameter corresponds to the lateral diameter of the pelvis, and the more oblique is its direction; from which reason the right ear can generally be felt behind

the pubis without difficulty, which would not be the case if the head had a perpendicular direction, or presented at the time of labour with the occiput forwards (as is still asserted by many, the most of whom consider the vertex presentations as belonging to the irregular and less favourable direction of the head, and as requiring for the successful termination by the natural powers unusually favourable, or at least much more favourable circumstances than the presentations of the occiput do). One may easily convince himself of what has just been observed, by examining those who have already borne several children, in whom the os uteri begins to open much earlier; and also in first pregnancies, before the os uteri is sufficiently open to allow the tip of the finger to pass,

and where the lower segment of the uterus is sufficiently expanded and thin: the tuber parietale, which lies forward, is generally not to be mistaken on examination through the walls of the vagina; even the sagittal suture may sometimes be felt through the uterine parietes.

As the head presses lower into the entrance of the pelvis, the posterior fontanelle commonly descends more in proportion than the anterior one does; this however is by no means always the case, for the relation between the two fontanelles is sometimes reversed without the slightest hindrance to the progress of the labour.

This revolving on its lateral axis takes place especially where the head, as it advances, experiences rather more than the usual degree of opposition from the hard or

soft passages; when this is in a greater degree, it is the result of certain malformations of the pelvic entrance: it does not however belong to the present subject, for this treatise is confined solely to the progress of natural labour. When the head has advanced through the entrance of the pelvis with the greatest circumference which it presents to it, the two fontanelles are again to be felt at an equal height. On account of the oblique position of the head, the greatest width of the cranium (from one tuber parietale to the other), as well as that of its basis, can never during its passage coincide with the diameters of the pelvic entrance.

As the head advances through the upper aperture, and engages in the cavity of the pelvis, the occipital fontanelle in

general remains corresponding to the left obturator foramen, and the head still preserves this position if it has already reached the pelvic cavity, and is approaching the external passage. That the head, as it sinks into the pelvic cavity, should take such a position in it, that the occipital fontanelle is found corresponding to the arch, or immediately behind the symphysis pubis, as is universally asserted in the systems, manuals, and other writings on midwifery (for instance among many of which I will here cite only those of Froriep and Siebold), is what in no wise accords with the result of my observations. When the head has sunk completely into the cavity of the pelvis, and approaches the external opening, the posterior fontanelle is still found corresponding to the left obturator

foramen. If the finger be introduced nearly in the centre of the pubal arch, in the direction of an imaginary median line of the pelvic cavity continued forwards or outwards, its point will touch pretty exactly upon the middle of the superior and posterior quarter, sometimes the middle of the posterior half of the right parietal bone. If a swelling of the cranial integuments has not already been produced at an earlier period, by the close contraction of the lower segment of the uterus upon the head as it advances further into the cavity of the pelvis (exactly where they are compressed into wrinkles), and if the head continues for a considerable time in this position (which is generally the case in women pregnant with their first child, &c.), a tumour is now for the first

time observed upon the posterior and superior quarter of the right parietal bone, *viz.* the part that lies behind or corresponding to the arch of the pubis.

To the left of this tumour and above it (whence those who have not had much practice in touching may easily be misled, and think that the head has already engaged in the external passage), the posterior fontanelle is plainly to be felt at a little distance, still corresponding to the left foramen ovale, and free from all swelling of the integuments.

By continued pressure of the uterine contractions, the posterior fontanelle at last gradually moves itself by slight degrees, repeated at equal intervals, in a direction from left to right (frequently more or less from above downwards), and the

occipital bone advances from the side of the pelvis under the arch of the pubis. It is not however the centre of the occiput that advances under the pubal arch, but the head approaches the os externum, with the posterior and superior part of the right parietal bone, and remains in this position until it has passed through the outlet of the pelvis with the greatest circumference which it opposes to it, where it then turns itself with the face completely towards the right thigh of the mother. When the head is engaged in the external passages, and we trace the sagittal suture with the point of our finger from the posterior fontanelle, it will during examination take the direction of a line drawn from the left descending ramus of the pubis to the right ascending one of the ischias; it is in

short the posterior and upper part of the right parietal bone which passes first through the os externum. According to my observations, the head does not complete the revolution upon its perpendicular axis from left to right, or in other words, the change from its oblique position to that where the face is directed towards the hollow of the sacrum: not even when it presses through the os externum with the greatest circumference which it offers to it, *viz.* a circumference which is not taken according to its lateral diameter (*viz.* from one parietal protuberance to the other), but a circumference which intersects the small and great diameter of the head at an acute angle. If in a labour that proceeds sufficiently slowly, whether it be a woman pregnant of her

first child, or one that has already borne several children, we keep our finger in contact with the posterior fontanelle, from the time that the head enters the external passages till it is born, we find that it usually remains directed towards the left side, until the head has entirely cleared itself. We can easily convince ourselves that this is the case, by tracing with the point of our finger along the sagittal suture from the posterior fontanelle, when the head is beginning to distend the os externum, and during an interval of the pains; it will not be found following the direction of the central line of the os sacrum, but obliquely from left to right.

What has just been said may be observed most distinctly in cases (especially in women pregnant for the first time, or

in persons where the perineum has not been injured by previous labours) where the head continues for some time at the os externum, and where it remains stationary during the interval of one or two pains, with its greatest circumference encircled by the labia.

In this position, the sagittal suture will not be found directed towards the posterior or lower extremity of the os externum (commiss. poster.), but crossing the right labium in an oblique direction from left to right, at some distance from its posterior or lower extremity, and the right tuber parietale will be distinctly felt clearing the labia some time before the left. All this will be observed to the best advantage if the patient lie upon her left side; there is in fact no position which

favours the manner in which the head passes through the outlet of the pelvis (and which I have just described) so much as this, and which is so beneficial and certain for the mother. Under these circumstances any supporting of the perineum is unnecessary, and the attention of the accoucheur is not disturbed, &c.*

* I have frequently observed young females in their first pregnancy, persons perfectly ignorant of the whole business of a labour, who were permitted to take any posture on the (common) bed that suited them best, who were, in short, left without any direction as to how they should place themselves, and especially upon the approach of and during the fourth period of labour, to turn upon their side, and upon the left more frequently than the right. If they were desired to lie upon their back during the powerful pains which take place when the head is distending the external passages (for the purpose of

If the head remain some time pressed against the distended vagina, without actually advancing under the arch of the pubis, or approaching the external opening, and by a rapid increase in the intensity of the pains (as is sometimes the case) it afterwards clears the passages with unusual celerity, the swelling of the integuments which the child brings with it (of which we have previously spoken), will be found limited to the posterior and upper quarter of the right parietal bone. If however the advance through the external passages follow in the usual manner, sufficiently slow, a swelling, *viz.* the common caput succedaneum, forms it-

examination), they assured me that these were much more severe and insupportable in this than in the other posture.

self (if there were not one already, or one that was capable of being distinguished from the swelling that already existed) during the passage of the head through the external meatus, at that part of it which is encircled by the opposing vagina, the basis of which, for the most part, covers the right parietal bone and a part of the occiput, engaging the right half of it, and generally merely the edge of the posterior fontanelle.

Johnson* had a better idea of the manner in which the head advances through the cavity of the pelvis than many long after him. Solayres de Renhac†, as far

* A new System of Midwifery, in four parts, &c., London, 1769.

† D. de partu diverso viribus maternis absoluto, Paris, 1771.

as I know, is the first who has mentioned that position of the head in the pelvic cavity, as it advances to the external passage: this admirable observer was as well acquainted with the oblique direction of the head at the entrance of the pelvis as Saxtorph*, whose excellent treatise appeared at the same time with his. The further mechanism of labour, however, he understood better; and the manner altogether in which Solayres describes the position of the vertex, with the posterior fontanelle directed forwards, and to the left, and the entrance and advance of the head through the pelvis, leaves in my opinion but little remaining that one could wish for.

* D. de diverso partu ob diversam capitis ad pelvim relationem mutuam. Præs. C. J. Berger, Havn. 1771.

SECTION II.

After that presentation of the head, which is mentioned as the most common, and which is termed the first position, namely, where the head at the time of labour is directed with its great diameter more or less in the right oblique diameter of the pelvic entrance (*viz.* running from the right side posteriorly to the left side anteriorly), and the occipital fontanelle corresponding to the left acetabulum, should that position of the head be the next in point of frequency which has been uniformly termed by authors the second, where the great diameter of the head runs corresponding more or less to the left oblique diameter of the pelvis and the occipital fontanelle approaches to

the vicinity of the right acetabulum; still less frequent should those be, which are named (according to most of the later German authors on midwifery) the *third* and *fourth* species of head or vertex presentation; namely, where the head at the time of labour takes a similar direction as in the two former, excepting that the position of the two fontanelles is reversed, *viz.* in the third position, the great fontanelle is turned towards the left, and in the fourth, towards the right acetabulum. By some, the two latter positions are considered as irregular.

With respect to the prevailing opinion as to the relative number or proportion of these species of position of the head, there would be little need of quotations for the learned, who are well versed in the lite-

rature of their profession; among many, I will therefore limit myself to quoting Froriep's Manual of Midwifery (p. 234 and 235), the more so, as it has gained great eclât among the later published compendia, and has been remarkably in vogue as an introduction to lectures, and as the author was at considerable pains to exhibit therein the prevailing opinions, views, &c., in short, to adapt the book to the standard point of knowledge, if not with respect to its form, at least by a careful selection of every new fact which seemed to him worthy of being known. Some have even given a definite proportion as to the frequency of each position of the head. Thus at an early period Baudelocque believed that the first position of the vertex was, with respect to

the frequency of its occurrence, in proportion to the *second* as 7 or 8 to 1, and to the *third* and *fourth*, as 80 or even 100 to 1*; he subsequently found, however, that this proportion was not correct, and according to observations communicated at a later period†, and taken from a great number of labour cases, the *second* position of the vertex occurs, with respect to its frequency in proportion to the *first*, nearly as 1 to $4\frac{3}{4}$, on the other hand the *third* to the *first* as 1 to 346. According to the excellent observations collected dur-

* See the earlier editions of his L'Art des Accouchemens.

† L'Art des Accouchemens, fifth edition, p. 671, and the tableau des accouchemens qui se sont fait a l'hospice de la maternité, depuis le 10 Decembre, 1797, jusqu'au 31 Juillet, 1806, inclusivement.

ing eleven years by Lobstein*, in the Town Hospital of Strasburg, the number of cases of the *second* position of the vertex, which came under his notice, were in proportion to the *first* as 1 to $2\frac{6}{7}\frac{2}{3}$, and of the *third* as 1 to $17\frac{1}{3}$. In a statement of the cases which occurred from 1812 to 1813, in the Lying-in Hospital at Würzburg, it is reported, that in 273, or rather (by subtracting four cases where the position of the head was not determined) in two hundred and sixty-nine cases of head presentation, which were completed by the natural efforts alone; the head in 213

* Observations d'Accouchemens recueillés à la salle des accouchées de l'Hopital Civile de Strasbourg; par Jean Frederic Lobstein, Dr. en Med. &c., in the Journal de Med. redigée par Leroux, mois de Juin, 1816.

took during labour the direction of the first *position*, and in the remaining fifty-six cases the *second* position, or nearly in the proportion of one to four.

SECTION III.

This does not entirely agree with my experience. According to my observations for many years, which I have made with the greatest possible care and attention, *the third position of the vertex is, after the first, by far the most frequent in occurrence of all the head presentations;* on the other hand, the second position of the head, which has been supposed to be so frequent, occurs very rarely. Thus for example during the preceding year, out of a hundred labours where the head

presented, and which I carefully observed from the very first commencement of the pains till their termination, the third position of the vertex occurred twenty-nine times. Of thirty-six labours, that happened in the Infirmary of this place, from the beginning of the year 1821 till the present time (February 1821), I counted twenty-two with the vertex in the *first* position, eleven with it in the *third*, two presentations of the nates and one of the face. According, however, to the observations which I have hitherto made, the proportion of the *third* vertex position to the *first*, with respect to the frequency of their occurrence, is as one to two and a half. None of the other presentations of the head can be therefore compared with the *third* position of the vertex in point of

frequency to the *first;* but of them the face presentations have been by no means the least frequent. During the time that I saw ninety-six cases of the third vertex position, the fourth occurred only twice; and of more than twelve hundred which I carefully observed and noted with particular accuracy, I do not find a single case of the head having been originally in the *second* position, and only two cases where the head took the direction of the conjugate diameter, the posterior fontanelle corresponding to the symphisis pubis, both of which required artificial assistance.

Labours which from the great rapidity of their course, or from other circumstances, were not observed with sufficient attention, have of course not been taken into account. From the observations I

have hitherto made, I have considered the *first* and *third* positions of the vertex as the usual head presentations, and the rest unusual, the most frequent of which were those of the face; still less so was the fourth position of the vertex; and rarest of all, the direction of the head in the conjugate diameter of the pelvis (which not long ago was considered as the only correct presentation, *situs capitis rectus et æquus*), and the *second* position of the vertex.

SECTION IV.

Prevailing as that opinion is, as to the greater or less frequency of the various positions of the head, the assertion is not less universal, that in the third and fourth

species of vertex presentation, the occiput, as the head advances more into the pelvic cavity, is uniformly turned into the hollow of the sacrum, and that the head comes through the external passage with the face directed forwards and upwards; that the mechanism of the labour is in general more difficult*; that these species of la-

* It might here be necessary at least to quote names as a proof of what I have said, if I had even room enough left for their number. I limit myself merely to quoting the opinion of one of the most experienced, celebrated, and well-known accoucheurs of the present day. "In the third position of the vertex," says this excellent practitioner, "which happens far less frequently than the second, the head always enters the pelvic cavity with the occiput lowest; it then begins to turn with the occiput into the hollow of the sacrum, the face being directed close behind the symphisis pubis, while the vertex

bour require more (and according to some unusually) favourable proportions, as to the space between the head and pelvis, &c. than the first, in order that they be completed by the natural powers without danger and injury; that nevertheless *there are sometimes cases*, where the occiput turns forward instead of backward, and the head disengages itself from the external passage in the usual manner*

with the occiput followed by the nape of the neck, slowly and usually with great difficulty disengages itself from the perineum."

* This favourable but unusual movement is described by some as occurring especially or exclusively in the fourth position of the vertex: for example, see Froriep's Manual.

We are told that the rectum is the cause why the occiput is sometimes turned forwards, instead of into the hollow of the sacrum. A celebrated teacher

(alas! as Baudelocque for instance remarks, too rarely for the good of the mother and her child). Many have considered these presentations as faulty, and

of midwifery, who informs us that he several times observed this change into the usual presentation, especially where the head had been in the fourth position, remarks "a proof of *what difficulties* nature can *surmount* in many *irregular* positions of the head." (E. v. Siebold Lehrb. der Embindungskunst, vol. i, p. 368.)

Another celebrated accoucheur, who is also the physician to a lying-in institution, after having described in his Manual the difficulties and dangers attendant upon a labour, where the head takes the third or fourth position, considers it as *highly fortunate for women*, that the first and second positions of the head occur *infinitely more often* than the third and fourth, so that these belong to the *unusual* occurrences in midwifery. (Senff Lehrb. für Heb. Halle 1812, par. cxvi.)

without going farther have recommended artificial assistance, and have described in glowing colours the difficulties and dangerous consequences with which they are attended.

SECTION V.

All this agrees with my experience as little as the opinions respecting the relative frequency of the various head presentations. From the observations which I have made, I am *thoroughly convinced*, that in cases of the third and fourth position of the head or vertex, in the more advanced state of labour, the occiput is not usually turned into the hollow of the sacrum, but that in cases of the third posi-

tion of the vertex, where the labour has advanced considerably, the posterior fontanelle is turned from the vicinity of the right sacro-iliac synchondrosis to the right foramen ovale, and in the fourth position from the left sacro-iliac synchondrosis to the left foramen ovale, and in this manner it clears the external passages; that this change of the third vertex position into the second, and of the fourth into the first, requires no peculiarly favourable circumstances, and that these species of labours can be completed under the most usual proportions of the active and passive momenta, which relate to the mechanism of child-birth, by the natural means, in the same time, with the same expense of strength, without greater difficulty, &c., than the labour where the head takes the

direction of the first or most common position.

In ninety-six cases of the third vertex position, and which I observed with particular care, and described in my note book, I remarked the head *three times* to come through the external passages with the face upward or forward; there were however peculiarities in these three cases which I must not omit to mention; in one the upper and under apertures of the pelvis were unusually wide, the fontanelles large, the parietal bones remarkably soft, communicating a feel like gold tinsel*, and had false sutures, the labour was also very rapid.

* Although *tinsel* is a literal translation of *knitter-gold*, yet I am doubtful if it will give the reader a correct idea, when so translated, of the peculiar sensation

Another was the case of a healthy robust female in her second pregnancy, who thought she had still eight or ten days more to go. Having much exerted herself in the execution of some duties, the liquor amnii escaped during the night without her being aware of it; the dilitation of the os uteri to an inch and a half proceeded very slowly, the third and fourth stage passed unusually quick, the umbilical cord was twisted twice round the child's neck, and no more liquor amnii followed the birth of it; the pelvis was

which the cranial bones in this soft state convey to the finger, and which the author thus intended to describe; it is that peculiar sensation of elasticity which a hollow ball of very thin copper communicates, when gently pressed upon with the point of the finger.—Tr.

generally, but especially at the inferior aperture, remarkably wide.

The third was the case of a robust, healthy, well-formed woman of two-and-twenty in her first pregnancy; her labour came on six weeks before the proper time; the child weighed five pounds six ounces, the parietal bones were in places soft, communicating a sensation like parchment or tinsel, the child was healthy and throve well, nor did the circumstances of the labour, with this exception, present any thing unusual. In every one of the other cases, the turning of the head followed, and I saw the same undisturbed process and successful completion in cases of first labour, as well as in those of persons who had already borne several children; in young women as well as

those who were more advanced in years; in cases where much or where little liquor amnii was present; where the abdomen was pendulous, or where it was not; where the pains were powerful, or where they were weak; where the progress of the labour was either quick or slow; in cases in which the umbilical cord was twisted round a part or not; or where the child's head was more or less strongly developed; or where the patient during labour had lain on her back or side, &c.

According to my observations, therefore, the process which has been considered as a regular phenomenon, is a deviation; and exactly that which has been esteemed a deviation from the usual course and rule, is perfectly regular.

SECTION VI.

The manner in which the head when in the third vertex position is directed during labour, and moves through the pelvic cavity, is, according to my observations, as follows.

At the beginning of the second period of labour, and, in those who have already borne children, even earlier, the great fontanelle is felt directed towards the left acetabulum, and the smaller one to the right sacro-iliac synchondrosis, nearly at an equal height; sometimes the one, sometimes the other, being reached with greater facility*.

* In consideration at least of those who have not had much experience, I believe that I must not pass on without some remarks upon what follows. When the head stands high, the third and first positions may be easily mistaken for each other. The sa-

As the *right* parietal protuberance in the first position of the head is the most

gittal suture of course cannot of itself decide, so long as merely an extent between its two extremities can be reached, or followed by the finger during examination, since in both cases it corresponds to the right oblique, or Deventer's diameter. For diagnosis, it is not sufficient to reach with the finger during examination one of the superior angles of the parietal bone which presents; these two angles can be mistaken for each other, and this has certainly been not unfrequently the case. It is indispensably necessary for a person, who has not had much practice, in order that he be quite sure of his diagnosis, to pass the tip of his finger over the one or the other fontanelle; in doing which (if he examine with the fore-finger of his right hand), his object, *viz.* with respect to the fontanelle which is directed forward and to the left, can be sometimes only attained by feeling with the ulnar side of the last joint of this finger.

depending part, so in this case it is the *left*. When the point of the finger is brought in contact with the head, in the direction of the central line of the pelvic cavity, it touches the protuberance of this bone. As the head continues to press further through the upper aperture and cavity of the pelvis (during which the left parietal bone constantly stands lowest), the posterior fontanelle usually sinks in a greater degree backwards than is the case in first positions of the head. The posterior fontanelle, at this period of the course which the head has to take, is easily reached; the great fontanelle less so. I have however not unfrequently found the contrary, without the smallest increase of difficulty to the process of the labour. As the head enters, and presses

through the superior aperture of the pelvis, the anterior fontanelle in this case corresponds always to the left foramen ovale, as the posterior one does in the first position; and *as soon as the head has engaged in the cavity of the pelvis*, the great fontanelle turns towards the descending ramus of the left os ischium, and both can be felt at an equal height as to each other. As soon as the head experiences the resistance which the inferior part of the pelvic cavity opposes to it, or in other words, the oblique surface which is formed by the lower end of the os sacrum, by the os coccygis, the ischiadic ligaments, &c., by which it is compelled to move from its position backwards, in a direction forward, it turns by degrees with its great diameter into the left oblique

diameter of the pelvic cavity; *i. e.* the posterior fontanelle is directed to the right foramen ovale, and as the head approaches nearer and nearer to the inferior aperture, it is the posterior and superior quarter of the left parietal bone, which is felt in the cavity of the pelvis opposite to the pubal arch; so that when the point of the finger is introduced under and almost perpendicular to the symphisis pubis, it touches nearly the middle of the superior and posterior quarter of the left parietal bone; and this is precisely the part, as the head advances further, which first distends the labia, with which the head first enters the external passage, and the spot upon which the swelling of the integuments forms itself.

As in cases of first position of the head,

the posterior fontanelle is usually directed to the *left* when the head passes the external passages, so in this case it is mostly directed to the *right*.

If the head be already born, the face turns, according to the observations which I have hitherto made on this species of vertex position, by far more frequently to the left than to the right thigh of the mother.

SECTION VII.

That change from the third position, to the one in which the head stands exactly right and left, and again from this into the second vertex position (during which it describes the fourth of a circle), consists of frequently repeated rotatory mo-

tions; so that if a person examine at different times, in the interval between and during the pains, and again at different periods of them, he finds the great diameter of the head at one time in the right oblique, at another in the lateral diameter, afterwards in the lateral, and then in the left oblique diameter of the pelvic cavity.

For one reason which belongs to the present subject, I must not leave unnoticed, that this rotatory screwing-like motion of the head as it advances, usually takes place much more quickly as the pain comes on, than the retrograde motion in a similar direction which follows as the pain ceases; and that the head, when the pain has ceased, so far as one can judge from the common signs, still con-

tinues to draw back towards its former position and direction. In the interval between two pains, immediately before the coming on of the next, I usually found the head at the greatest distance from the position it had taken during the height of the preceding pain. Hence if a person examine during a pain, but withdraws his finger upon its cessation as soon as he perceives the contraction in the uterus to cease, he will have no perfect idea of the process. What I have just said has certainly very frequently given rise to deception and error, especially where a person has not obtained a correct result from examinations made at an earlier period, either from the head standing high, or was not able, for instance, on account of the membranes continuing distended dur-

ing the intervals of the pains, or where the examination had not been steadily enough persevered in, &c. In this circumstance we shall partly find an explanation of the prevailing opinion, so contrary to mine, *viz.* according to which the second position of the head (*i. e.* as original position) is not of rare but of frequent occurrence, the third position on the contrary is exceedingly rare; so that even in this contradiction I could find a confirmation of the result of my observations, with respect to the frequency with which that spontaneous change in the position of the head occurs, had not a more than sufficient number of observations, instituted with the greatest attention (and partly in company with persons of acknowledged

skill in their profession), given me the fullest possible conviction.

When a celebrated teacher of midwifery, El. von Siebold, asserts that the labours sometimes happen more frequently in the second than in the first position of the head, and that, in the institution of which he had the care, almost all the labours during a period of two months were with the head in the second position, I have not the least hesitation in believing that the head was actually found in this position; but at the same time am fully convinced, that these cases were *originally of the third position of the head*, and that he had either examined too late, or had not ascertained the direction of the head with certainty, until the change from

the third into the second position had already taken place. Formerly this species of error occurred to myself by no means unfrequently. As to the rest, what that celebrated teacher declares he has observed, respecting the frequency with which the second position of the head occurs, this agrees completely with my experience as to the third position of the head.

This position sometimes occurs very frequently in proportion to the first, sometimes they alternate with each other, and sometimes several labours in the first position follow each other, without one in the third intervening. Thus for instance, of sixteen labours where the head presented, which occurred last year, from the 30th of January to the end of February, at the

Lying-in Hospital of this place, all of which I myself attended, we counted *eleven* in the third, and *five* in the first position of the vertex, and of the former, *six* occurred one after the other.

When accoucheurs of considerable celebrity assert, that, *according to their experience, the species* of spontaneous amendment in the positions of the head, as it has been termed, where the occiput directed to the right sacro-iliac synchondrosis turns to the right side, and then forward towards the right foramen ovale, occurs *far less frequently* than that where the occiput directed backwards and to the left, moves towards the left side and then forward,—I must most decidedly declare my perfect conviction that here has been a great error; nor do I feel less fully assured

that the theory (although it appears so plausible), respecting the influence which the rectum exerts in favouring the circular movement of the head in the latter case, and increasing the difficulty of it in the former, has been the mere effect of imagination. The theory is here as false as the alleged fact, for the explanation of which it was invented. It will appear singular, I own, to a person (and I must at the same time ask indulgence for my freedom), when he turns his attention to things, which, as the mechanism of child-birth, he has daily before his eyes, the occurrence of which he sees so frequently, and which he has exerted himself to gain an accurate knowledge of, to find here and there in the compendia, whole paragraphs,

and whole pages whose contents throughout do not agree, or, more frequently, are diametrically opposed to what takes place in nature. When one looks at every paragraph, and sees how evidently it has been composed at the desk, he is strongly and involuntarily reminded of the answer, which our countryman Swift gave to a singular remark of the Danish prince. "There are," said the prince, "a number of things in the heavens and upon the earth, of which no mention is given in the works on natural philosophy." "Good," said he, "but on the other hand, a number of things are described in them, of which no trace appears either in the heavens or upon the earth." The question is not, "how this or that person would move the

head through the pelvis if *he* had the direction of it," but, "how nature would act in the case."

SECTION VIII.

I have already shown in a former paragraph, that the third position of the vertex especially, and its spontaneous change into the second, was much more frequent than generally imagined. The excellent W. J. Schmitt also, to whom science in general, and especially the doctrines of the mechanism of child-birth, are so much indebted, says in his Geburtshülfliche Fragmenten, the change into the usual position which the head makes as it enters the pelvis obliquely with the face directed forwards, occurs perhaps more fre-

quently than many seem to be aware of. He quoted also every thing that belonged to this subject from the various books on midwifery, and brought forward whatever might serve as a proof of what he had said. But an historical description was not my intention. Among other things, the cases are imperfectly described, important circumstances passed over, and unimportant ones brought into notice. One can plainly perceive from such descriptions of labour cases, that they have been cut out according to the confirmed theory and received principles, or so arranged that the operative part of the treatment should appear in full lustre and all its glory, or that they afford an excuse for having used artificial assistance, or for having made experiments on the living human body for

the purpose of teaching pupils, &c. Besides, such imperfectly described and mutilated cases will be soonest detected by him who has tried to make himself intimate with the course of nature. At the proper place, I will exhibit what matter I have as yet collected, as contributing to the history of the doctrines of the mechanism of child-birth.

As far as I know, no one before Solayres de Renhac has *distinctly* taught, that the head, as the labour advances, sometimes passes from the third position of the vertex into the second, and upon clearing the pelvis it assumes the usual one; nor has any one before him so fully described the manner in which this takes place.

Although he also asserted, that in cases of the third and fourth vertex positions,

the occiput during the course of the labour was usually directed to the hollow of the sacrum, in which place he then mentions the difficulty which the head experiences in entering and passing through the inferior aperture of the pelvis, arising from the difference in the curve of the forehead to that of the occiput, requiring for the completion of labour by the natural powers more than the usual proportions, &c. (See his Treatise, p. 25).

SECTION IX.

The similarity in the mechanism of labour in cases of the third, to that of the first or most usual position of the head, with respect to the first, second, and fourth periods (if we except its reversed direc-

tion), has made my description shorter (sect. vi), and allowed me to refer to what has already been said upon the subject (sect. i).

For the same reason, the similarity in the process of labour, which the fourth position of the head has to the third, makes a detailed description of it superfluous. In a similar manner, &c. will the rotation of the head from left to right, or the change from the fourth to the first position, be in general accomplished by the natural powers, as in the other case from right to left.

SECTION X.

A swelling of the cranial integuments occurs also in cases of the *third* position,

under the same circumstances and in the same manner in which, during labours of the first position, a swelling is formed upon the upper edge of the *right* parietal bone, nearly at an equal distance from its angles (sect. i), with the only difference, that in this case it is situated upon the *other* parietal bone. It explains of itself (without considering that these cases occur less frequently than those of the first position), why a person has still fewer opportunities of observing it upon the head of a child that is already born, than in cases of the other position*.

* On this account, I thought that this would be the best place to sketch the more minute circumstances of a case which I have lately observed, and already quoted on a previous occasion. A tall, robust, healthy woman, became pregnant a second

As during a labour, where the vertex is in the first position, the swelling which

time, having passed through her former labour three years before with perfect success. At an earlier period she had felt the motion of the child upon the right side, for some days past however most at the anterior part of the abdomen. She reckoned that she had still eight or ten days to go, but during the night, after a day of great exertion, the liquor amnii escaped without her perceiving it : towards morning she felt pains, but did not come to the hospital till noon, having no idea that her labour was so near. She was examined immediately, and the os uteri was found dilated laterally, being an inch and half from one side to the other, and an inch from before backwards, and lying in close contact with the head. The left parietal bone presented, and its tuber, which was in the central line of the pelvic cavity, was distinctly felt through the anterior wall of the lower segment of the uterus. The great fontanelle, which was directed forward and to the left, was more

rises upon the head, previous to and during its entrance into the vagina, is chiefly

easily reached than the posterior one, and afterwards continued in this position as the head advanced deeper into the cavity of the pelvis; the pelvis was throughout wide, but strikingly so at its inferior aperture. Although the pains were sufficiently powerful, yet the dilatation of the os uteri had made by half past three in the afternoon but little progress.

The integuments of that part of the head which corresponded to its opening were at first compressed into folds, these however soon changed into a swelling, which became gradually more prominent, thicker, and firmer, its circumference coinciding to the mouth of the womb: beyond the swelling the sagittal suture was to be felt distinctly. A quantity of stinking brownish-coloured liquor amnii occasionally escaped. Towards four o'clock the pains assumed a different character, the os uteri now dilated quickly, and the head advanced with unusual rapi-

confined to the superior and posterior quarter of the *right* parietal bone, so in this case it is upon the *left* parietal bone; in like manner as the right half of the cranium is more elevated immediately

dity into the cavity of the pelvis, and through its inferior aperture, with the face forward, in the direction which it had assumed at the superior aperture. The chord, which was thirty inches long, was twisted twice round the child's neck. A hard thick oval swelling of the integuments of the head, which from behind forward was an inch and a half in length and one in breadth, had formed upon the upper half of the left parietal bone, close to the upper edge and at an equal distance from both its angles; the rest of the vertex was free from swelling, and presented no unusual configuration. The infant, which was a healthy female, weighed nearly seven pounds, and both mother and child left the hospital in a state of perfect health.

after a labour in the first position of the head, and the right parietal bone stands higher than the left, so in this case it is exactly the contrary. This variety in the configuration of the head cannot at the first glance be mistaken, and these two appearances (*the form of the head*, and *the situation of the swelling of the scalp*) are so *remarkable* and *striking*, that if a person had not even examined during the labour, he would generally be enabled to decide from them, whether the head had taken the direction of the first or third position, if the course of the labour, as is requisite for the healthy state of this function, had been sufficiently slow. If however the labour be in its whole course excessively rapid, if the expulsive power surpass the usual degree, or the pelvis

is in proportion too wide, or of unequal width, or the soft parts do not offer the usual opposition, for instance on account of ruptured perineum from previous labours, or from the unusual smallness of the head, where the child has not been carried to its full time, or the bones of the head incompletely developed, being soft, yielding, and bending as tinsel or parchment, &c., so that the body during its passage through does not experience the usual pressure or resistance; in this way does nature *make use* of mechanical advantages; she despises, as it were, the artifices, which under the usual circumstances are necessary for the attainment of her purposes; she forsakes the laws which in other cases she is compelled to follow; and the pic-

ture of a piece of mechanism, arranged according to the laws of a most profound calculation, becomes indistinct and defaced. Thus, after a labour under these circumstances, we sometimes find no trace whatever of swelling of the cranial integuments. Under such, or more or less similar circumstances, unusual as they are, the head which has taken the direction of the third or fourth position, does not always make that turn, but comes through the external passage, with the forehead forwards or upwards. What attentive accoucheur of experience has not already remarked, that the shoulders, or in nates presentations the hips, are pressed through the inferior aperture of the pelvis with their greatest breadth in the lateral dia-

meter? Thus then it is evident what different lights will different circumstances throw upon the picture*.

* A wide extended field lies open here for observation, and a rich harvest to be expected from it for physiology, and that art, the purpose of which is to render assistance to women in labour; to this every one will agree, who has in any way observed nature with attention, is free from prejudice, and means honourably towards science.

The course which we observe nature to follow, under injury of the other functions for the restoration of their equilibrium, and during disturbance of the function of parturition, is indeed one of the worthiest, highest, and most important objects of inquiry.

Whatever is to be gained here must be the result of attentive observation of nature, and as it were carefully watching nature's actions. The words of Bacon are here remarkably applicable: "neque fingendum aut excogitandum sed inveniendum quid natura faciat aut ferat." Among others, abundant

SECTION XI.

My limits do not permit me to give at length the result of my observations on the relation, &c. *of the swellings which form upon the cranial integuments* during labour, although I am convinced that these appearances are of the greatest importance, as far as respects the manner in which the head in its various positions moves through the pelvic cavity. To be intelligible to the reader without being too prolix, one stands much in need of some fixed and generally established topo-

opportunities for observation, which also offer unusual cases, are highly necessary for one to accomplish any thing in this species of inquiry. The fool-hardy attempt of compelling nature to do wonders, is not here required.

graphical description of the fœtal vertex (somewhat in the way that Gall has proposed, although certainly for very different purposes).

I must be allowed to add something belonging to this subject, respecting the *face presentations*, as they have a considerable resemblance in their mechanism to that of labours where the vertex presents.

In that presentation of the face which of the two more common forms occurs most frequently, *viz.* where the head during labour presents with the face, the forehead being turned to the *left* ilium, there forms (and especially where the membranes have been ruptured before the os uteri was sufficiently dilated, which, according to my observations, is very fre-

quently the case here, or if the second period of labour follow very slowly, &c.), a swelling, first upon the upper part of the right half of the face, which in this species of face presentation is always situated lowest.

If the further advancement of the third stage, or the progress of the head through the external passages follow more quickly than usual, or if the labour at this period be artificially completed, the tumour of the face will appear upon the upper half of the right side, and the rest of it be free from swelling (of which I have given a case at length in one of the reports of this Hospital). But if the third stage advance slowly, and the head remain a long time in the cavity of the pelvis before it actually enters the vagina, the inferior half

of the right side of the face, *viz.* part of the right cheek, will be remarked after birth as being the principal seat of the swelling*.

Thus, as in cases of the first position of the vertex, where the head rests in the pelvic cavity (immediately before its entering the external passage), the superior and posterior part of the right parietal bone, is that part which, corresponding to the pubic arch, is situated immediately behind the labia, and upon which the

* Of course with respect to the swellings, changes of form, colour, &c., which this or that part of the child, as it presents, undergoes, and chiefly and especially the face during labour, it is important to ascertain what may be attributed to the effects of labour, and what to other causes, as for instance, too frequent examination, rough and careless handling, &c.

swelling of the integuments is formed: so in this case it is the right cheek, and as in the former case it is the lesser fontanelle which, corresponding to the left foramen ovale, moves by degrees from left to right, so here the chin may be felt behind the right foramen ovale, and which moving gradually from right to left passes under the arch of the pubis. In the second species of face presentation, the forehead corresponding to the right ilium, has a direction the reverse of the former. In twenty-two cases of labour with the face presenting, successfully terminated by the natural powers, and which I had the opportunity of minutely observing from beginning to end, the forehead was in fourteen cases directed to the left, and in the others to the right ilium.

In a midwifery practice of twenty years, I have never had a case come before me, where in presentations of the face as the labour advanced (if no mechanical assistance had been given by art, as for instance changing the direction of the head, bringing it down further, &c.) the forehead had turned itself forwards or upwards, and brought the face, at the inferior aperture of the pelvis, into a direction contrary to the usual one. I have been assured of this by several accoucheurs, who were men of observation, some of whom had been much longer in practice than myself.

In a like manner under these circumstances, I never observed the occiput in cases where the feet or nates presented, to turn into the hollow of the sacrum, whether the anterior surface of the child

had been originally directed forwards or backwards, or during the further advancement of labour had taken this direction. I also remarked, that under the most usual circumstances of the phenomena upon which the mechanism of child-birth depends, the labours where the face presented, proceed usually *without greater difficulty* than, and terminate quite as successfully as those where the vertex presented; and from my observations I am of opinion, that no unusual proportions are required for those cases.

SECTION XII.

The reason why in the preceding sentence I said, "*without greater difficulty*,"

instead of "quite as easily," was because *easy* labours are, strictly speaking, an exceedingly rare exception to the general rule. After the incipient inspiration of the new-born being, there is perhaps no function which undergoes so great and extensive a change in its organic arrangement as that of parturition. And even if experience (which after all is of the most importance) did not so distinctly show that easy and rapid labours are always dangerous, and seldom without injurious consequences, analogy on the one side, and a nearer consideration of this great phenomenon of nature on the other, would lead to the conclusion that a certain duration of time, certain difficulties, an effort of the strength, a struggle, &c. belong to the essential requisites of the

safe, uninjurious, and in short healthy progress of this function.

As during pregnancy the changes in the system necessary for labour are prepared, and with the gradual diminution in the communication of nourishment between the uterus and ovum, the means for the expulsion of the one are developed in the other; in like manner during the birth of the child are the preparations made for separating and expelling the secundines without danger, and for ensuring a healthy child-bed, &c. The design of nature (if I may so express myself), is not merely that the ovum be expelled, but that this should be performed in a manner that is neither dangerous nor detrimental to the mother or child. This is also here as in the other forms of development at-

tained by gradual preparation and change &c. "*Quanto diutius*" (says Harvey), "*partum retinent et morantur, tanto facilius et felicius rem expediunt.*" Thus as the uterus is excited and brought to activity, and roused to that great and powerful display of strength, from the obstruction which the ovum and the passages destined for its transit oppose to it; in like manner will this obstruction serve to give the uterus an opportunity of contracting equally, of expending a portion of its activity by reacting against the object, and of becoming capable of returning into the state of rest, and as it were of still life, in which it continues during the period of lactation, and on which depends the excitement to activity in other parts.

The degree of difficulty, length of time,

and expenditure of strength in the performance of this function, is well known to be different in different individuals.

Thus for instance, persons who are stout, robust, and of a phlegmatic habit, have usually to struggle against more difficulties than those who are thin and of an irritable habit. Persons considerably advanced in years, pregnant for the first time, or those of a very early age, bear children with much more difficulty than women of an age between twenty and thirty. The manner in which a strong robust peasant woman brings her child into the world (a species of labour which ought to serve as an example), would not be adapted for the delicately brought up, irritable inhabitant of a town, and *vice versa*.

But to estimate the degree of difficulty

according to the peculiar constitution of the patient, to estimate its effect, and to decide in a given case, whether we may, and what it is that we may leave, or which must be left to nature, and whether and in what degree art may assist, requires a knowledge of the phenomena upon which the mechanism of child-birth immediately depends, a knowledge of the usual course of this function, as well as the numerous varieties within those limits where nature is in the condition to assist its purpose without injury or danger, and a knowledge of the mutual active and passive relations, which exist between the act of parturition and the other parts of organic life, both in an healthy state of the latter, and where it has a disposition to disease, whether general or (the influence of child-birth ex-

cepted) limited to a single organ. All this plainly presupposes deep insight into the inward vital relations, both in the state of health and that of disease, great experience, a practical tact that can only be gained by accurate, careful, and continued observation, &c. As to the rest I refer, for the sake of brevity, to my Erfahrungen und Abhandlungen, Mannheim, 1812, 1 Entwurf einer Systematischen Anordnung, &c., par. 30—42, and particularly, par. 40 and 41.

If we admit, for which I think I have adduced sufficient grounds, that proportionate difficulties, according to the constitution of each individual, and an effort of strength (requisite in child-birth), are inseparable from the nature of this process, we must conclude that an abbreviation of

this process, though performed by an able hand, before the salutary change on which the preservation of health depends has taken place in the organization of the mother,—that a premature and sudden removal of these difficulties cannot be a matter of indifference,—that such a violent interference with the functions of nature must incur the risk of destroying the health, though this should not ensue for some time after.

A multitude of reasons may be alleged, it is true, from the rich field of ætiology, at all events, to exculpate the artificial delivery, undertaken without an indication, be it from ignorance or any other motive.

If we consider this, and that on the

other hand, after a more intimate and comprehensive knowledge of the mechanism of parturition, many imaginary indications, or such as are arbitrarily adduced from a love of operating, and which seem to demand an amelioration in the position of the fœtus, and an artificial delivery, disappear.

That in many cases of apparent or actual obstruction to child-birth, the causes cannot be attributed to disorder of the mechanism, which yields a motive or excuse for the intervention of instruments*;

* How often has it not occurred, that unusual positions of the head (but where nature herself was in a condition to complete the labour), have given reason to consider a labour as irregular, and to have recourse to artificial assistance, where in other posi-

it is manifest that it is of the greatest importance to a judicious and salutary treatment of lying-in women, to endeavour, through the most scrupulous observation, to acquaint ourselves with the other modifying conditions in parturition, to learn to estimate more correctly the active influence, which the difficulties of the case, the effort of strength, pains, &c., exercise upon the rest of the organization, according to each constitution, according to the age, mode of life, temperament, habit,

tions of the head one would not have had a thought about it?

Let every one take this to himself,—instead of many documents which I could here quote from various writings, I have no objection to let my own experience in the former years of my practice, serve as an example.

hereditary tendency and disposition of the nerves and vessels; points on which our medical works are almost silent. This is a field which admits still of great cultivation, and which it is of so much more importance to turn to account, as a rich harvest may be with certainty calculated upon; our Armamentarium Lucinæ is moreover at present most plentifully stocked, and there is a superfluity of operative manœuvres, &c.; but I am digressing from my subject.

SECTION XIII.

With respect to the manner in which the head is moved through the passages in those cases, where, presenting itself at

the time of labour in the third position of the vertex, it does *not* make the usual turn as the labour advances, but passes through the inferior aperture of the pelvis with the face turned forwards, I thought, that in spite of the rarity of these cases, I ought not here to pass over the result of my observations, but at least to quote it briefly, since it differs from the prevailing description that is generally given. The head in this case also (according to my experience), does not in sinking into the cavity of the pelvis, and engaging in the external passages, turn itself in the manner that it is said to do in the various compendia and manuals*.

* For instance, those of Baudelocque, J. Burns, Capuron, Delpech, Ebermaier, Froriep, Gardien, Senff, Siebold, Weidmann, &c.

The occiput does not turn itself into the hollow of the sacrum; but the anterior fontanelle, if the head be on the point of entering the external passages, or a part of it already between the labia, continues still directed to the left foramen ovale, and the small fontanelle, which generally lies deepest, to the right sacro-sciatic ligament.

Immediately before it clears the os externum, the anterior fontanelle may be felt free from all swelling of the cranial integuments, at the inner edge of the left descending branch of the pubal arch: when the head is about to enter the external passage, it is chiefly the upper and anterior part of the left parietal bone, together with a portion of the superior part of the left frontal bone, which are to

be felt opposite to, or behind the upper part of the pubal arch, or which will come in contact with the finger, when introduced nearly in a perpendicular direction to the symphisis pubis. During its passage through the external opening, the anterior part of the left frontal bone presses with its flat surface against the deeply-curved arch of the pubis, and I have observed a red mark to have been produced by the pressure on this spot; I perceived also that the face, when the head had cleared itself, turned towards the left thigh of the mother.

If the head in this case stay a considerable time in the external passage before it passes the labia, it will experience for some time the pressure which the vagina so powerfully exerts upon it, and

the exact position of the swelling of the cranial integuments (with which the child is born) will be the upper and anterior quarter of the left parietal bone, which is that part of the head that continues lowest during its whole passage through the pelvic cavity, as also through the vagina and external opening.

It never happens, during the passage of the head through the pelvic outlet, that its lateral diameter (from one parietal protuberance to the other) moves in the lateral diameter of the inferior aperture, but always in an oblique direction. I have seen it so, especially (although not exclusively) in women pregnant for the first time. I refer further to the peculiar circumstances which have been already noticed (sect. v and x), where I have

observed that nature has followed this extraordinary or more unusual course, which I do not esteem on the other hand as less regular, considering the peculiar momenta which modify the process.

SECTION XIV.

On questioning pregnant women as to *the sensation of the child's motion*, it is well known that the most of them declare that they feel it exclusively, or most distinctly, at the right side of the abdomen.

If this has continued the case, until the beginning of labour, I have almost always seen the head at that time take the direction of the first position (sect. ii).

In by far the greatest number of cases of the third position of the vertex, which

I have observed, the motion was felt during pregnancy chiefly on the left side and forwards, sometimes only forwards, and in some cases of this sort it has been felt on the left side, or forwards and left for the first time, a fortnight or only a week before labour, having been till then constantly observed on the right side. The third position of the vertex has been very rarely observed in those cases where the woman has constantly felt the child's motion on the right side till the beginning of her labour. Some cases of this position have come under my notice, where the motion of the child has been felt chiefly on the right side throughout the whole pregnancy, and where the sensation of it has for the first time passed over to the left side or forwards, as the

first perceivable pains made their appearance, so that the patients declared they had felt that as the child had turned in the womb, it had taken another position; but I must not here pass on without observing, that it is necessary to use some caution, especially with uneducated people, in questioning and obtaining answers, in order to prevent misunderstandings on both sides.

SECTION XV.

If the frequency of the third position of the vertex be taken into consideration, and that labours with this position of the head are throughout terminated without greater difficulty and quite as successfully by the natural powers, as those

where the head comes forward in the first position, it might be perhaps more natural, in classing the positions of the head, to let the third come immediately after the first rather than the second (as later authors in following Baudelocque do), which is by far the rarest of all those positions where the head presents at the time of labour.

In this case Solayres de Renhac has again anticipated us.

He has made that position of the vertex where the anterior fontanelle is directed forwards and to the left, to follow immediately upon the one where the occiput is situated in a similar direction; and after these, the two other oblique presentations of the head. That he describes the position of the head in the conjugate

diameter of the pelvis first, arose merely out of respect to the opinions which prevailed at that time in his own country, since he asserts that this position of the head was extremely rare, although almost every author had described it as being of by far the most frequent occurrence. The turning of the shoulders and their position at the outlet of the pelvis, were also known to this accurate observer, before the time of Charles White. It would have been in every respect not uninteresting, and perhaps not without good results, had Baudelocque only cursorily mentioned why he differed from that arrangement of his teacher, especially as he had, with such laudable zeal, so highly extolled his merits in the exposition of

the mechanism of child-birth, and had naturally thus excited the attention of the learned to this subject.

Thus he repeatedly acknowledges in the introduction to his Midwifery, with as much pleasure as gratitude, that he had taken from every source that was known to him, but that he was most indebted to the Dissertation of Solayres, and next to this, to his own experience; that the second part of his work, which treats on natural labour, was in fact merely a translation of the treatise, "De partu viribus maternis absoluto."

I consider the observation as due to the memory of the excellent Solayres, whose merits as respects the doctrine of the mechanism of child-birth, have

been hitherto, with the exception of his worthy pupil, not sufficiently valued*, that the sentence in Baudelocque's Introduction is not only indistinct but inexplicable, where, in speaking of this treatise, he says, "Cette thése est un traité complet sur l'accouchement naturel, dont le mécanisme, auparavant, n'avoit été developpé qu'imparfaitment. Elle pouvait passer pour un chef d'œuvre sur cette partie, aux yeux des personnes *moins attachées*

* This is indeed less remarkable with respect to his *cotemporaries*, for instance, one Le Roy, Sue, &c.; but in later works, which in other respects are crammed with literature, one seeks in vain, where the mechanism of child-birth is treated of, even for the name of Solayres; although among the numerous titles of books, one finds mentioned insignificant compositions, school dissertations, &c.

à la *diction latine*, qu'a la doctrine qu'elle renferme."

If the excellent character of Baudelocque be taken into consideration, his great modesty, his ready acknowledgment of the precedence and merits of foreigners, but above all the unbounded respect which he entertained for his master, and which he took every opportunity to display*, who would doubt that nothing but a very strong reason could have induced him to touch so lightly upon a fault, although it was merely respecting its outward form and appearance? This moderated in some degree, I must confess, the pleasure which I felt (after

* An in partu propt. angust. pelv. impos. symph. os pub. sect. Paris 1776, sect. x.

having sought in vain for some years to obtain this work), on receiving the news from Paris of its being at last procured. I was nevertheless not a little surprised to find that remark (which in the excellent translation is even less sparingly expressed than in the original) to be throughout quite unfounded. If that quality, which according to Baudelocque's assertion, in order to obtain the rank of a first-rate work, should be wanting in the treatise of Solayres, were able to make it worthy of this high name, it has in my opinion the highest claim thereto. The style is smooth, beautiful, and flowery: figurative and antiquated, it exhales a breath of the old Latin. Good classical scholars, to whom I showed the treatise, and who were fully competent to judge,

agreed with me in this point. In the sphere of obstetric literature, so far as I know, it would be difficult to exhibit any thing better in this respect. The language strictly taken, as far as respects the construction and selection of words, is here and there not so correct as that of the great teacher, whom I have heard called the "Celsus inter embryulcos," while on the other hand it is more classical. It is indeed not unworthy of a master to express himself in this language, clearly, concisely, and elegantly, upon a subject like the one we are at present treating of*.

* I cannot help adding a remark here, that has often struck me whilst engaged in writing this essay. It is singular that the department of midwifery has by death been deprived of two men in the flower of life, Roederer and Solayres, both of whom excited

SECTION XVI.

Whatever may be the reason, why the frequent occurrence of the third position

great expectations for this science. The reader must permit me to compare some of the points of similarity between them; both were adorned with great talents, both were fundamentally grounded, and possessed of the preliminary knowledge and other branches of science necessary for an accoucheur (in the strict sense of the word): a deep conviction of the importance of the profession in which they were engaged was remarkable in both, and was a reason for their studying so diligently and so long, before they considered themselves fit to take their degrees. They were both physicians, both ardent observers, and equally zealous in their attachment to anatomy and midwifery. In this art Solayres was partly the means of promulgating the doctrines of a teacher, whose instructions Roederer had enjoyed the benefit of. What Haller says of the latter, applies to

of the vertex, and its usually consequent transition into the second, &c. have been so long overlooked, it does not belong to the present place to examine into. I must only allow myself to quote what I have already said in another place, *viz.* that I am fully convinced, that in many cases, where,

him, "Vir brevis ævi, qui in obstetriciâ arte, perinde ut in anatome magnam sui spem excitaverat." To consider the points wherein they differed from each other, particularly with respect to the circumstances which more especially influenced their education, for instance, what Baudelocque says of Solayres, "Il n'avoit que la nature pour maitre" (and other circumstances which have come to my knowledge through a more direct source), would lead to observations not altogether uninteresting; but I have neither room here, nor is this the place for them; and I perhaps have already deserved the reader's censure in both respects.

in the second and beginning of the third stage of labour, this position has been actually perceived, but the occiput afterwards advancing forwards under the arch of the pubis instead of over the perineum, the results of the former examinations were considered as deceptions. I repeat this assertion here with the greater confidence, as I will freely and openly confess that formerly I myself was very frequently led into this error, but at last these cases occurred so frequently, that my attention was excited, and the keeping my finger in constant contact with the child's head, during many presentations of this sort, especially from the time when the membranes burst, was the means I used for getting at the truth. It is perfectly natural that those people would be much

more liable to fall into the above mentioned error, who had not obtained perfect certainty in the results of examinations which they had made in the earlier stages of labour, or who had not examined at that time with sufficient care, not long enough, or in too great intervals (sect. vii), who have not perfect reliance in the accuracy of their examinations, or who leave this duty at the beginning of the labour to the assistant, the midwife, &c. Lastly, what especially makes one disposed to fall into this error, is the description of the mechanism of labour in the third and fourth vertex positions, as found in the compendia and manuals of midwifery, and as given in the lectures of celebrated teachers. Hence it is quite a natural consequence, that a person is more

inclined to put mistrust in his own examinations than in the rules laid down by the masters of the art, and thus are errors propagated from generation to generation; the inexperienced pupil is always sure to feel what his teacher has found before him; but as the excellent Wiedemann correctly observed, "in no branch of knowledge does one so long remain a beginner, from the difficulty of the subject, as in the one which we are now treating of."

It is now three years ago since a foreigner, Dr. M——i, a well-informed teacher of midwifery, and full of ardent zeal for the profession, came to this place. It so happened, that during his visit at the Hospital, a labour with the head in the third position came on. He examined while

I was there, in the presence of many persons well acquainted with their profession, and declared that he had found nothing at all unusual, but that it was the first position. As we did not appear disposed to agree with him, he examined again, and after repeated examinations, at last convinced himself of the state of the case.

Although he did not doubt the possibility of the head turning, from its being still so high up (the membranes not being yet ruptured), he nevertheless thought the assertion of one present, who remarked that this would *certainly* take place, to be too venturesome; nor was he less surprised at the confidence with which we all continued to assert, that the change into the second position would ensue, espe-

cially as the head had already entered the cavity of the pelvis, and the anterior fontanelle still continued to be felt behind the left foramen ovale: he himself was also convinced of the unusual size of the head, and the strong development of its bones. In a short time after, he had an opportunity of witnessing, and as he assured me with no less surprise than pleasure, the aforementioned change in the position of the head.

It is scarcely anywhere more striking what the influence of a previously received, and particularly a long entertained opinion is capable of exerting even on the best disposed minds, than in things which come under the sphere of obstetric examination. One examines and finds what one

is already sure of finding: it is like looking through coloured glass.

There are circumstances nevertheless, which are much greater impediments to the introduction of a correct view of what takes place in nature, or the rectifying a faulty theory.

The truth, which in the present case can only be detected by honest, impartial, and careful investigation, becomes most difficult to get at with those people who presume that they are perfectly right; who keeping a self-created ideal of the mechanism of regular parturition before their eyes, presume to guide and dictate to nature, wherever she may happen to deviate from this model, who would instantly operate with the hand, lever, or forceps, wherever

they percieved her proceeding in a course which they did not consider was the right one. People of this sort, of themselves destroy the possibility of knowing nature*.

* They might have referred to cases from the writings of celebrated authors, where nature herself had put them upon the track by which they could approach her, and learn to know and respect her laws and modus operandi. Fondness for operating, obstinacy, or heaven knows what, withheld them from following the track which they had already perceived. A celebrated lecturer (whose book is at this moment before me) asserts, that as the head which had been extracted by means of the forceps, came into the world, contrary to expectation, with the face towards the sacrum (because one had before met with it in the contrary direction), that the application of the forceps had caused it to take this turn, in order, I presume, that what belonged to art should not be attributed to the operation of nature.

When men of acknowledged very great experience, of whom, among many, I will name only Baudelocque, assert that the second position of the vertex occurs so frequently, and the third on the contrary so extremely rarely, I am very far from wishing to deny, and will willingly believe that they (for whom I entertain unbounded respect), have really found the head in the second position; but from my observations I am perfectly convinced, that these numerous cases were originally of the third vertex position, which in the further progress of labour had passed over into those of the second: that they had therefore either overlooked the original position, or had discovered the direction of the head too late, or had examined too late, &c. I request those who

may be inclined to be displeased with this assertion, which is an open confession of what I am convinced of, to consider how difficult even the greatest masters have described the diagnosis of the head positions to be, what has been said on this subject by men for instance like La Motte, Puzos, Roederer, Berger, Saxtorph. When Roederer, an observer of the greatest skill and accuracy, says, in speaking of the position of the head, where the face is turned towards the pubis, "nequit penitius cognosci antequam caput est natum;" when a Smellie freely confesses that he had been deceived;—who in the world would venture to assert, that he could not fall into a similar predicament, or declare that the belief in the possibility of others having erred in their results were heresy!

If people can have considered so long that the position of the head, at the superior aperture of the pelvis, in the conjugata, was the only one that was correct and according to rule, merely because it is usually expelled from the pelvis with the occiput forwards and the face backwards, and hence could overlook the oblique position of the head, which one has daily opportunities of observing; we can the more easily imagine why the third position has been unnoticed, since it occurs more rarely than the first, and the head, as in this position, is usually born with the face backward.

If these reasons be not taken as a sufficient excuse, one must accuse those men of experience and merit, who have retained that opinion so long, of a want of dexterity.

In closing I must again observe, that I am very far from considering the data as fixed, even respecting the doctrines of the mechanism of labour, to which the observations I have here offered especially refer. I am on the contrary convinced there still remains much to discover, much still to give to the world more correctly, and to fix more accurately, &c. ("multum restat adhuc operis, multumque restabit; nec ulli nato post mille sæcula præcludetur occasio aliquid adhuc adjiciendi." —Seneca, epist. lxiv), and I anxiously long for further information on this subject from men of experience. I will conscientiously put every hint and doubt to the test, and carefully apply the result in circumstantially examining this subject.

As due to the science, I must express the wish, that they who may judge this little essay worth noticing, would, when they themselves find it necessary to examine nature, be pleased not to pass their opinion as the result of single or a few observations, but after numerous and repeated ones, and in some subjects not until they themselves had made a very considerable number. It is indeed by no means an unreasonable wish, that subjects which are merely the result of observation should be judged of from the same point of view. Wherever it can be fairly demonstrated that facts have not yet been clearly and fully brought to light, there is still time enough for theory. Those who bring calculus and demonstrations to their assistance, who

find this or that turning of the head during its passage through the pelvis, not fully corresponding to the laws of nature, who with rule and compass in their hand, assert that the occiput for instance, according to their calculations, can evidently move no where else than in this or that direction, we would beg to remind of the admirable remark of Bacon;—"*Non arctandus est mundus ad angustias intellectus, sed expandendus est intellectus ad mundi imaginem recipiendam qualis invenitur.*"

ON

PRESENTATIONS OF THE NATES

IN GENERAL,

Their Diagnosis and their different Species.*

SECTION XVII.

LABOURS, where the child comes into the world with the nates forwards, are gene-

* The following observations are translated from the manuscript of a work, upon which the author is at present engaged, and which is intended as a practical compendium of midwifery, designed chiefly for the use of midwives, but where he has carried the subject so far that it may be also used with advantage by students of medicine; hence the reader

rally called presentations of the nates, and may be distinguished by the following marks.

In some cases, for instance in emaciated subjects, where the abdomen already stretched by previous pregnancies has retained a certain degree of softness or flaccidity, and where the uterus is distended with a moderate quantity of liquor amnii, the head can be more or less distinctly felt to one side through the upper part of the abdominal parietes.

On examining per vaginam, a large

will observe, that he has not limited himself strictly to describing only the mechanism of child-birth as it occurs in presentations of the feet and nates, but has added some interesting observations upon its prognosis, which I have also taken the liberty of translating.—Tr.

roundish body will be perceived presenting, but which from its softness cannot be mistaken for the head. Towards the end of the pregnancy (whether the woman be pregnant for the first time or not), the nates, which are embraced by the inferior segment of the uterus, do not sink so low into the superior aperture of the pelvis as the head does; on which account it occasionally happens, that at the beginning of the labour, and even until the rupture of the membranes, no part of the child can be felt presenting; considering all things, the diagnosis of a presentation of the nates, before the escape of the liquor amnii, is far from easy, but after this has taken place, the separate parts, as the nates with the division between them, the contracted, or, if the child be dead, the

relaxed sphincter ani, the parts of generation in the fissure formed by the two thighs which are turned upon the abdomen, the extremity of the sacrum, &c., the escape of the meconium, or the finger of the examiner being soiled thereby, afford an easy means of distinguishing the nates, if the parts, which with the exception of the sacrum are all soft, have not lost their peculiar form through swelling, and thus become indistinguishable. As the nose is the most certain mark by which we may distinguish, not only a presentation of the face, but also its direction with respect to the pelvic parietes, so in this case are these two purposes supplied by the sacrum.

Since the nates present themselves at the time of labour in a greater variety of

manner than the head does; and since this produces no essential or peculiarly prejudicial change in the mode in which the head passes through the pelvis, it will be sufficient to describe the two following species as the most usual ones.

1. *Presentation of the nates with the back turned forwards, towards the anterior parietes of the uterus.*

2. *Presentation of the nates with the back turned towards the posterior parietes of the uterus.*

In both cases, one usually finds the back of the child, at the beginning of the labour, turned more or less sidewards, *viz.* the ischia running parallel with one or other of the oblique diameters of the pelvic entrance.

SECTION XVIII.

The first chief division occurs more frequently than the other, but at the same time the difference between the two in this respect is not great.

The frequency of the nates presentation, taken on the whole, compared with the other positions where the child lies with its long axis in that of the pelvis, has been already mentioned (sect. iii). I must also remark here, that presentations of the nates or feet occur relatively less frequently in women pregnant for the first time, than in those who have already had children, especially in those who have had large families.

SECTION XIX.

Labours, with the nates or feet presenting, follow certain laws quite as much as those where the head presents; only that one more frequently sees deviations from them, both with respect to the manner in which the child presents at the time of labour, and its passage through the pelvis; but where under a proper state of the other requisites for healthy parturition, no prejudicial result occurs.

SECTION XX.

As to the relation which the head and members bear to the trunk, with respect to their position, this is the same when

the child presents at the time of labour with the nates or in the usual manner. The feet are originally, therefore, always situated in the vicinity of the nates, and at the beginning of the labour are sometimes felt at the same moment.

If, however, they are situated rather higher than the nates, as the latter descend into the pelvis, they rise upwards and are turned upon the abdomen and breast of the child, and in the course of the labour are born with them at the same moment. But if they are situated somewhat deeper, they slip down before the nates; at times also they pass through the pelvis together with the nates, and are thus born with them.

SECTION XXI.

In every case, whether the nates have at first a completely transverse or oblique direction, they will be always found, on pressing lower into the superior aperture of the pelvis, to have taken an oblique position, and that ischium which is directed anteriorly to stand lowest. They pass through the entrance, cavity, and outlet of the pelvis in this position, which is oblique both as to its transverse diameter as well as to its axis.

Thus, if in the first species the left ischium were either originally directed more or less forwards (which is usually the case), or had taken this direction in passing through the superior aperture, the nates descend in this direction into the

pelvic cavity, with the left ischium during the whole time standing lowest; and this is the part, during the further progress of the nates, which first passes between the labia, as the os externum dilates.

As they advance, and while the left ischium, which is directed forwards and always somewhat to the right, comes completely under the pubic arch and presses against it, the other ischium, which is situated in the opposite direction, and which has to make a much greater circuit, passes forwards over the strongly-distended perineum, so that when the pelvis is born, the abdomen of the child will be directed to the inner and posterior surface of the mother's right thigh. The rest of the trunk follows in this position; and as the

breast approaches the inferior aperture of the pelvis, the shoulders press through its superior aperture in the direction of the left oblique diameter; and during its passage (*viz.* the breast) through the pelvic outlet, the arms and elbows, which were pressed against it, are born at the same moment. But, whilst the shoulders are descending in the above-mentioned oblique position, the head, which during the whole progress of the labour rests with its chin upon the breast, presses into the superior aperture in the direction of the right oblique diameter (*viz.* with the forehead corresponding to the right sacro-iliac synchondrosis), and then into the cavity of the pelvis in the same direction, or one more approaching the conjugate diameter. After this it presses through the

external passage and the labia in such a manner, that whilst the occiput rests against the os pubis, the point of the chin, followed by the rest of the face, sweeps over the perineum as the head turns on its lateral axis from below upwards.

But it is sometimes the *right* ischium, which in this chief division is either originally turned forwards, or in the process of time assumes this direction. In this case, the child passes through the pelvis in the same manner as before; only with the difference, that the surface of the body takes of course a different position with respect to the pelvic parietes, *viz.* its anterior surface, which in the former case corresponded to the right side of the pelvis, will here be directed to the left;

and the head will press through the superior aperture of the pelvis in the direction of the left oblique diameter (the forehead passing before the left sacro-iliac synchondrosis).

As in positions of the cranium, the swelling of the integuments is chiefly met with on that parietal bone, which during the passage of the head through the pelvis is situated lowest, and on that spot with which it enters the external passage (sect. i), so in this case the livid-coloured swelling appears on that part, which, directed forwards, was situated lowest during the passage of the nates, and with which the nates were born.

SECTION XXII.

In the second chief position, *viz.* with the anterior surface of the child corresponding to the anterior abdominal parietes of the mother, it is chiefly the left ischium which is either originally situated forwards, or takes this direction as the nates sink through the superior aperture of the pelvis, which latter preserve this oblique direction during the farther progress of the labour, both whilst pressing into the pelvic cavity and when entering the external passages. If the ischia be already born, the anterior surface of the child turns itself to the right and backwards, either immediately or as the rest of the trunk advances; but the manner in which the head in this case presses through the

entrance, cavity, and outlet of the pelvis, is the same as has already been described (sect. xxi).

It does not unfrequently happen, that in this species of nates presentation, the right ischium is either originally directed forwards, or takes this direction. In this case the nates will move through and clear the pelvis in the same manner as before, only with the difference, of course, that the anterior surface of the child will be situated forwards and to the left. The child also makes the turn, as in the other case, either immediately after the nates have cleared the os externum, or when the rest of the trunk has advanced further, only that here its anterior surface will turn backwards and to the left; in like manner also, as the head presses

through the superior aperture, the forehead will here descend, corresponding to the *left* sacro-iliac synchondrosis. It sometimes happens in the one or other of these two cases, especially where the head is small, that the body, which, directed with its anterior surface forwards and to the right, or forwards and to the left, is born as far as the shoulders, turns itself then (and frequently during the course of a single pain, by which it is fully expelled), from the side completely forwards, and then to the opposite side; so that the anterior surface of the child, which for instance in the first case was, before the pain came on, still directed forwards and to the right, will be afterwards instantly, in the twinkling of an eye, situated backwards and to the left.

SECTION XXIII.

It sometimes also happens in presentations of the nates, that the head does not rest with the chin upon the breast, but the occiput, as in those of the face, is pressed against the nape of the neck; in this case the passage of the trunk through the pelvis, according to which species of nates presentation it may be, follows, in the manner already described, as far as the head; this, with the occiput depressed on the nape of the neck, enters the superior aperture with the vertex corresponding to one or the other ilium of the mother; and in passing through it, and pressing lower into the cavity of the pelvis, the vertex gradually turns more and more backwards, so that when the trunk is born, the arch

of the cranium is directed to the hollow of the sacrum, and the inferior surface of the under jaw to the internal one of the symphisis pubis. The passage through the inferior aperture takes place in the following way, *viz.* whilst the under jaw presses with its inferior surface against the os pubis, the point of the occiput, with the vertex followed by the forehead, sweeps first over the perineum.

ON LABOUR

WITH

THE FEET PRESENTING,

Its Diagnosis, and the Course it takes.

Footling births, are those labours where the feet are found presenting; both feet usually present, less frequently one only.

If the membranes are not distended, the feet may be distinguished through them, and still more easily after their rupture, by their peculiar form, by the toes, which are shorter than the fingers, by the flat sole of the foot, which is longer and nar-

rower than the palm of the hand, by the heel with the ankle bones on each side. The back of the foot is always bent up towards the tibia, and the heel is consequently the lowest. From this reason, and on account of the similarity between the ankles and the condyles of the elbow joint, the heel can be easily mistaken for the elbow, which it certainly considerably resembles; the sole of the foot however will on closer examination remove all deception. If the feet be still situated high up, it is frequently not easy to distinguish the position of the child's body from their direction, on account of their extreme mobility, and especially if (which is often the case) they be crossed over each other, with the toes of the one foot situated close to the heel of the other.

In examination the knee may be distinguished from the elbow, for which it may in some degree be mistaken, in that it is thicker, that it has two prominences and a depression between them; while on the other hand, the elbow, which is thinner, presents to the feel between the two prominences, a projection in which it seems to end.

SECTION XXV.

As in presentation of the nates (sect. xvii), it will be sufficient here to adopt two chief divisions, *viz.*

1. *With the toes directed backwards;* and,

2. *With them forwards.*

SECTION XXVI.

The feet frequently change their position as they pass through the pelvis, nor do they receive a distinct direction until the ischia have engaged in its superior aperture, where the child then passes through the pelvis in the same manner as it does in labours where the nates present (sect. xix). If the feet are found near the os uteri, or inferior aperture of the pelvis, with the toes turned forwards, we have just as little cause to fear that the child will be born with the anterior surface of its body directed forwards, as in a case of the first division of the nates presentations.

Since in labours where the feet present,

the body of the child opposes less resistance than in those where the nates present, in which case the thighs are pressed upon the breast, and the child enters as it were doubled into the passages destined for parturition, it is easy to understand why in the one case the body passes through the pelvis more quickly and with greater facility than in the other.

In presentations of the nates, and especially in those of the feet, there generally escapes at the moment that the membranes are ruptured a greater quantity of liquor amnii, and continues to do so for a greater length of time, than in presentations of the head.

SECTION XXVII.

This is the usual course of labours where the nates or feet present, if the fœtus, the passages destined for the process of parturition, and expelling forces be in a proper condition, and if nature be not disturbed in her occupation of expelling the fœtus by any external cause, for instance pulling the child, attempting to turn it round, &c.

If, because the nates or feet appear to advance too slowly, a degree of extractive force be applied, this will have a great and important influence on the progress of the labour. For where it is nature, or in other words the uterus, that moves the child on by means of the pressure which it equally and uniformly exerts; in the

first place, the chin during its passage through the pelvis will constantly remain pressed upon the breast, and will have the effect of directing the head into and through the pelvis in the most favourable position. Secondly, the arms remain pressed upon the breast and are born with it. Thirdly, the soft passages from the gradual advance of the child are dilated sufficiently slowly, so as to oppose less resistance to the head as it follows; and, fourthly, from the progress of the labour being sufficiently slow, the uterus will be but gradually relieved of its contents, its contractile power increased, and itself rendered capable, by means of sufficiently powerful contractions, of forcing the head into and through the pelvis within a proper period of time. But if any extracting

force be applied to the child, from which the pressure that results from the uterine contractions is removed, and which acts upon the child in every direction, and keeps the chin and arms pressed upon the breast, the arms slip upwards on each side of the head, the chin quits the breast, and the head together with the arms approach the superior aperture in a most unfavourable position; by which their entrance and passage through the pelvis are evidently rendered difficult. The soft passages become too forcibly and suddenly dilated, the contractile power of the uterus is injured from its contents being too rapidly withdrawn, and hence it loses the power of pressing the head into and through the pelvis.

PROGNOSIS

IN

PRESENTATIONS OF THE NATES AND FEET.

SECTION XXVIII.

Presentations of the nates or feet, under a proper state of the circumstances on which the healthy course of parturition depends, can be completed without injury by the natural powers alone, and decidedly without more difficulty to the mother, nay, even sometimes with much less than in presentations of the head. But for the same reasons as have been already given in presentations of the face, they are on

the whole less desirable than those of the head; for under the same circumstances where labour with the head presenting, passes over without injury to the child, will that where the feet or nates present, prove fatal to it; in like manner as in presentations of the face, the long-continued pressure on the blood-vessels of the neck exposes the child to danger, so in this case it will have a similar effect on the umbilical cord; for as long as the fœtus has not yet breathed, a free circulation of the blood in the umbilical cord is as important to it, as respiration is to the child that breathes; and an impediment to the circulation of the blood in the umbilical cord is quite as dangerous for the child that has not yet respired, as an interruption

in the respiration is to one that has already lived in air, or in other words that has breathed; hence, if when the body is partly or wholly born, the passage of the head through the pelvis be to a degree protracted, on account of less favourable proportions between the size of the child and capacity of the pelvis, or from insufficiency in the uterine contractions, the child will be exposed to more or less danger, on account of the pressure to which the cord is subjected. Hence, as experience teaches us, many more children are born dead where the feet or nates present, than those where the vertex presents.

SECTION XXIX.

Lastly, it is easy to understand from what has just been said, and in which also experience coincides, why fewer children are born dead where the nates presented than where the feet have; for the inferior or pelvic extremity of the trunk with the legs bent upon the abdomen, opposes a greater circumference during its entrance into, and passage through the pelvis, than where the feet have slipped down before the nates. Hence, on the one hand the soft passages are more strongly dilated, while on the other the passage of the trunk through the pelvis becomes more protracted; by this means the contractile power of the uterus is increased, and the pains strengthened; the beneficial result

of which is, that exactly at the momen which is so dangerous for the child, *viz.* where the head enters and engages in the pelvis, and where any circumstance that retards its progress becomes easily fatal to it, the labour becomes accelerated, while the head, from an increase of power in the uterine contractions and a sufficiently dilated state of the soft passages, is carried with less difficulty through the pelvis, and the umbilical cord is therefore less compressed.

APPENDIX.

I have selected the following Cases, as calculated to give the reader a tolerably accurate idea of the course which labours follow where the head presents in the third and fourth position, and have given merely the results of my own examinations to avoid all suspicion of partiality, which I might otherwise have incurred if I had copied them from the Hospital Reports.

CASE I.

Anna Maria Bechtelheimer, June 5th, 1827, a strong stout young woman; first

pregnancy; has had pains more or less severe for nearly twenty-four hours. At 4 a. m. examined. Os uteri dilated to two inches; membranes not ruptured; a fontanelle to be felt towards the left acetabulum of the mother. At 8 a. m. this had turned so much to the left as not to be reached by the finger, while the small fontanelle was now distinctly felt to the right, so that the sagittal suture corresponded to the transverse diameter of the pelvis. At 12 it cleared the external passages; it came very slowly, and I had plenty of time to ascertain the direction it took, as it was gradually pressed through; the posterior fontanelle was *not* in the middle of the pubic arch, but corresponded to its right branch. As the head, which was considerably elongated, protruded, it

was evident that *the forehead turned towards the left sacro-iliac synchondrosis.* From the time which it had taken to pass the external passages, there was a considerable swelling of the scalp; this was situated upon the *left parietal bone*, leaving the posterior fontanelle free.

CASE II.

Name and date omitted; æt. twenty-four; delicately formed; first pregnancy. On examination I found the membranes ruptured; os uteri not quite fully dilated; directed the finger as usual to the left, and feeling a suture fancied I felt the posterior fontanelle: examined again, distinguished the posterior fontanelle to the right and backwards; sutura sagittalis running in the right oblique diameter of

the pelvis; what I first felt towards the left was a part of the anterior fontanelle; the posterior fontanelle advanced more and more forwards, until it corresponded to the right acetabulum; after clearing the os externum, the face turned towards the left thigh of the mother. The swelling of the cranial integuments extended for about $\frac{1}{6}$ of an inch over the sutura sagittalis to the right parietal bone, being itself chiefly seated on the left one.

CASE III.

Catherine Neuer, January 16, 1828, has had pains: anterior fontanelle remarkably distinct towards the left acetabulum: head came with the occiput under the pubis; face turned to the mother's left thigh.

CASE IV.

Carolina Bischelberger, æt. twenty-six: second pregnancy: miscarried in her first.

January 18, 1828, has had slight pains: posterior fontanelle to be felt very distinctly towards the right sacro-iliac synchondrosis at 4 a. m. At noon the posterior fontanelle was to the right and forwards; head passed with the occiput under the pubic arch; face turned to the mother's left thigh.

CASE V.

Johanna Stellen, æt. thirty-five, stout made, the mother of two children.

March 9, 1828, has had pains since two o'clock this morning. Examined at 11 a.m.: os uteri fully dilated; membranes not yet ruptured; very little liquor amnii

between them and the head; the anterior fontanelle can be felt distinctly forwards and to the left; as the pain comes on, it turns backward into the transverse diameter of the pelvis, and is then more difficult to reach.

One of the students examined soon after, as the pains became much stronger, and could not feel the anterior fontanelle any longer in this direction. The head then passed rapidly through the os externum; the occiput passed under the right descending ramus of the pubis, face backwards and to the left.

CASE VI.

Johanna Baüchlè, æt. twenty-six, first pregnancy.

March 13, 1828. Os uteri at 7 a. m. fully dilated; the membranes burst, and

it again contracted; externally the uterus has an irregular form, being contracted, as it were, into two large lobes, one in the right hypochondrium, the other in the left hypogastrium; examined at 11 o'clock: os uteri very high, so that the finger could not pass through it without using too much force; head very high. From 12 till 4 p. m. the pains were very inconsiderable, after which they increased, and the uterus gradually recovered its natural form. At 7 p. m. os uteri fully dilated, thick and soft; pains strong; head in the entrance of the pelvis; posterior fontanelle to the right sacro-iliac synchondrosis; towards 8 o'clock it advanced into the transverse diameter, and much lower; at 9 it passed under the right ramus of the pubic arch. The

face made an effort to turn to the left, but was prevented by the umbilical cord, which was twisted twice round the child's neck.

CASE VII.

Anna Maria Helfert, æt. twenty-six, third pregnancy.

May 10, 1828. Felt pains at 6 p. m.: at 9 p. m. the os uteri was dilated to an inch and half; anterior fontanelle was to be felt forwards and to the left, the four sutures remarkably distinct; posterior fontanelle backwards and to the right, also very distinct; both fontanelles at equal height; no liquor amnii; membranes tight over the head; at midnight the sagittal suture corresponded to the transverse diameter of the pelvis; occi-

put came forwards under the right descending ramus of the pubis; face turned to the left thigh.

CASE VIII.

Presentation of the Vertex in the Fourth Position (Fifth of Baudelocque).

Margaretha Haen, æt. twenty-five, of large stature, robust, healthy.

June 27, 1828. Has had pains since last night, os uteri dilated to $1\frac{3}{4}$ inch; head engaged in the superior aperture of the pelvis; the anterior fontanelle with its four sutures very distinct, *forwards and right;* posterior fontanelle backwards and left, also very distinct; both equally high.

" At half past 7 the anterior fontanelle

was lower than the posterior, and at 8 the sagittal suture was felt parallel to the transverse diameter of the pelvis; the posterior now lower than the anterior one."—Naegelè.

At half past 8, the posterior fontanelle considerably the lowest, and now distinctly forwards and to the left: at 9 the head was born, face turned towards the right thigh of the mother, *viz.* to the right and backwards; the cord, which was 27 inches long, was twisted twice round the child's neck, but produced no impediment to the progress of labour: the child, a boy, weighed 6lb. $\frac{1}{2}$oz.

CASE IX.

Presentation of the Face (First Species).

Maria Eder, tall, in her third pregnancy, had twins the last time.

October 1, 1827, examined five days ago, and then felt the portio vaginalis of the uterus full half an inch long, and head presenting.

3 o'clock p. m., found the os uteri high up and backwards, external opening dilated an inch; the internal one only half an inch; membranes ruptured an hour before.

At 6 p. m. os uteri still very high and backwards; pulled it forwards with the finger, and felt the right eye, root of the nose, and edge of the right superior maxillary bone; to the left of the pelvis I felt

the forehead; right eye and zygoma stand lowest; pains slow.

At 8 p. m., forehead rather more to the left sacro-iliac synchondrosis.

At 2 a. m., os uteri lower; during the absence of a pain it is soft and tolerably loose; dilated almost to a crown piece; portio vaginalis gone. Felt the right eye, and was able to reach the mouth at the right side of the pelvis. Could not reach the left eye, having to pass backwards over the root of the nose into the hollow of the sacrum.

At 3¼ p.m., pains follow each other slowly and are not efficacious. Os uteri rigid, and presses hard upon the face during a pain; the part which presents, *viz.* the right cheek bone, is considerably swollen, and the swelling extends to the forehead.

At 3½ p. m., pains stronger, head advancing, but the face so swollen that I could distinguish nothing, the whole feeling like a bladder.

At 3¾ p. m., pains increased, head advanced lower and soon began to distend the labia; first the forehead, close by the root of the nose; then the eyes, which were considerably swollen; as the perineum dilated backwards, more of the head protruded. The nose passed next, under the upper edge of the right labium, and the chin followed under the pubal arch.

The child, a boy, soon breathed; both eyes closed, and the lips not capable of meeting, from the degree of swelling. The vertex was remarkably flattened out, and the head in its long diameter very

much elongated. The placenta followed before the chord had ceased to pulsate.

The swelling upon the child's face engaged the upper lip, the right cheek and eye, the nose, and a portion of the side of the forehead.

THE END.

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